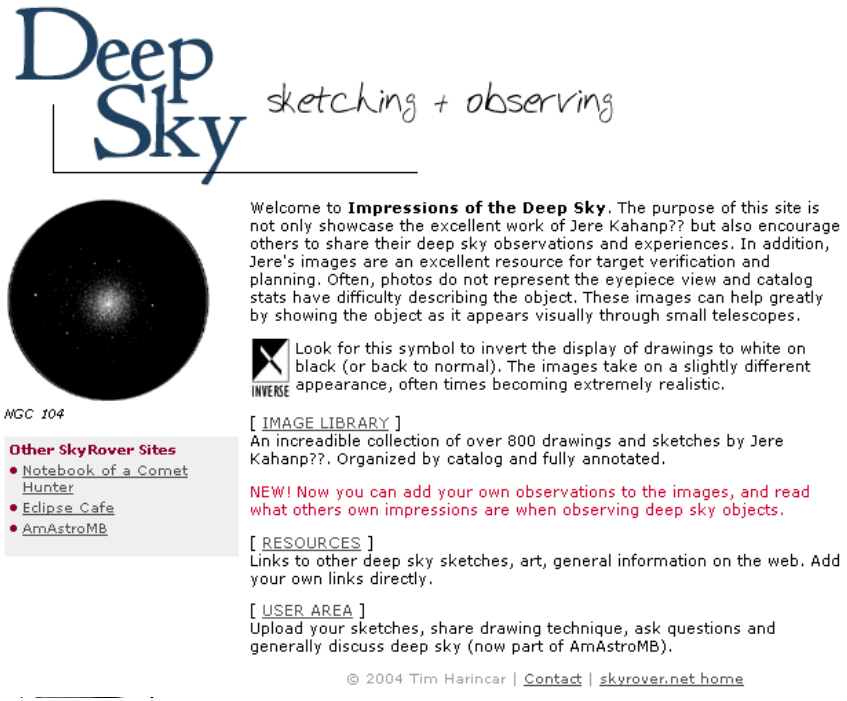
Web Page of the Month



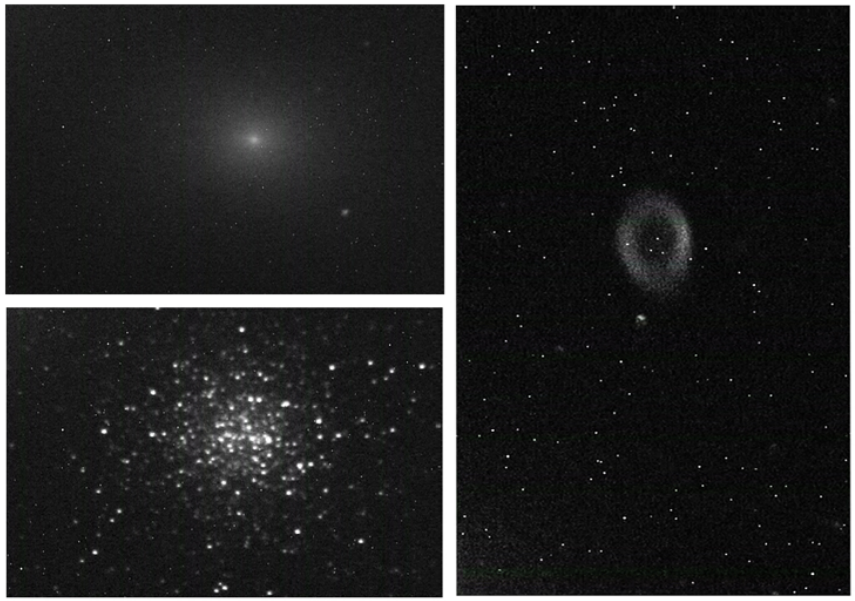
I discovered this website of astronomical sketches with Deepsky Astronomy Software.

Deepsky is observing planning software (http://www.deepsky2003.net/). One of it's features is to link to Internet sources for information on any particular object in the observing list. Skyrover is one of them.

The link to the Digital Sky Survey is very convenient as it passes on the coordinate information directly to the website. All you do is choose the link to the Digital Sky Survey and the object's image pops up in a web browser window.

http://www.skyrover.net/ds/

SkyNews



Stellacam EX First Light - Meade 10" SCT - 128x Accumulated Exposures
Clockwise starting with vertical M57, M13 and M31. No processing or dark frame.
August 9, 2004 - David Lee and Bruno Quenneville

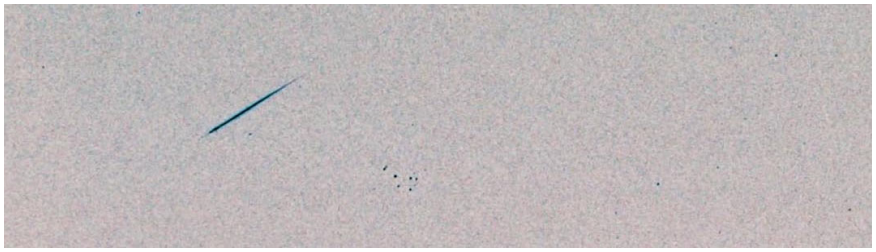
http://victoria.rasc.ca/

This Month

Members' Night

What we did on our summer vacation ...

Come and hear about our exciting summer.



Chuck's image of a Perseid whizzing past the Pleiades

Address Change? Information Incorrect?

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ROYAL ASTRONOMICAL SOCIETY OF CANADA • VICTORIA CENTRE

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Website Editor: Joe Carr
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web@victoria.rasc.ca

Members at Large:
Bill Almond, Jim Hesser,
Ed Maxfield, Frank Ogonoski,
Blaire Pellatt, Colin Scarfe,
Rich Willis

New Members Liason:
Sandy Barta

This Month

Astronomy Cafe

At Bruno Quenneville's
2019 Casa Marcia Crescent,
Victoria, BC.
Call 477-2257 for more information or directions.

Newcomers are most welcome.

Come and enjoy!

September 15

Astro Imaging

Every 3rd Wednesday at Bill Almond's

354 Benhomer Drive

Star Party

September 17 to 19.
See page 13 for details

September 24

New Observer's Group

At Sid Sidhu's:

1642 Davies Road (off Millstream Lake Road) at 8:00 PM.
Call 391-0540 for more information or

October 13

October Meeting

7:30 pm
Room 060, Elliott Building, UVic

Saturday, November 20

Annual Dinner

Gorge Vale Golf Club
details to come

Yes, We post important, timely, member-related news to our email list.

Online information about the RASCVic and Skynews email lists:
http://victoria.rasc.ca/
click on: 'Members Only'

Jupiter

Here's a view of Jupiter I took on 27 May with a Meade LPI camera and Autostar Suite software. With the camera mounted in the 1 1/4" eyepiece holder of a Meade 12" LX200 S/C, I took 200 short exposure RGB images (no filters needed), and the software chose and stacked 50 of the highest quality (better than 85%). I subsequently processed those stacked images with RegiStax wavelet software and Photoshop 6.

Information on the Autostar Suite appears in Sky&Tel in Meade's advertisin. gThe LPI is a small, affordable, webcam type of imager designed for lunar and planetary imaging or for bright objects like M42. Island Eyepiece carries them. This camera is ideal for use with any telescope having tracking capability and is very easy to use, with no guiding necessary! Image processing software is included on the CD. RegiStax freeware was featured in April's Sky&Tel on page 130. After downloading it, I was intrigued by its wavelet feature and watched fascinated as surface detail gradually appeared out of the mushy mess the atmosphere had made.

Anyone interested in buying this camera and wanting some info can call me at 478-6718 or email fwalmond@shaw.ca.

Bill Almond

Island Eyepiece and Telescope

250-743-6633
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President's Message

We are nearing the end of a summer that we will remember for an almost unbroken run of clear skies.

An exception to the rule was August 21, the day of our annual picnic at Pearson College, when it was grey and rainy. The weather had been so nice up to that day that no one begrudged the badly needed rain, and one of our veteran observers admitted that there had been so many clear nights that he was almost tired of astronomy.

The July weekend of the Island Star Party put on by our friends at the Cowichan Valley Starfinders gave us beautiful skies and memorable nights of observing, including an unusual (for these parts) Auroral display.

And there were many nights like those throughout the summer, which many of us took advantage of at our own observing sites and at the Centre of the Universe atop Little Saanich Mountain. August brought us excellent skies for the week of the Perseid meteor shower.

Although the planets of the spring had left the evening skies by mid summer, many of us feasted on the photos of Saturn and its moons sent back from the Cassini spacecraft, which entered the orbit of Saturn at the end of June. We look forward to more exciting data from Saturn and its largest moon Titan in the months to come.

As for the Centre of the Universe, our observers group concluded some successful meetings with the staff there, and we are moving toward an agreement that will improve our volunteering experience and, we hope, give us more and better access to Little Saanich Mountain.

Summer isn't over yet. Don't forget that the RASC's annual Star Party at the Victoria Fish and Game Association near the Malahat summit the weekend of

(Continued on page 4)

The deadline for the next issue of SKYNEWS is

September 25 2004

Get your SKYNEWS early and in colour. Tell Lauri, our Treasurer, that you get SKYNEWS on line and we won't mail you a copy.

President's Message Continued

September 17. There will good people, good food, good speakers, and good observing.

On a personal note, I will be gone to Edmonton to pursue an exciting new educational opportunity by the time you read this. My wife and I are keeping our home in Victoria, and I will be around for RASC events next spring and summer after the academic term.

I am stepping down as president this fall, and our longtime treasurer Lauri Roche will be leaving our executive. So, we are looking for new people to continue the excellent work done by our current executive.
Please consider helping out.

Chris Gainor

Check it out!

http://www.allthesky.com/constellations/const.html

Wonderful photography complete with data.

David Lee

http://www.astrosurf.com/avl/UK_index.html

A great virtual moon atlas

Ed Majden

On the Cover!

Stellacam EX

The Centre's new Stellacam EX finally saw first light last night at Astronomy Café. The evening started off a little disappointing as we couldn't focus the new Meteor Catcher lens. It was just too close to the camera sensor to reach infinity focus. Fortunately this was user error as I discovered at the end of the evening when I put away the camera with it's lens cover. Attached to the lens cover was a spacer ring the exact depth need to bring the lens to infinity focus … sigh.

Enough of tales of incompetence; now for the exciting news. As you can see from the composite of images the Stellacam can integrate dim objects very effectively, all in real-time without a computer and extra processing. The 128x accumulation mode can accumulate 128 frames before outputting to the recording device. Very nice! I can see the possibilities with a large monitor or TV on observing nights. I'm very pleased.

David Lee

ROYAL ASTRONOMICAL SOCIETY OF CANADA • VICTORIA CENTRE

(Continued from page 12)

this season. Then I realized Cetus was up, which also meant M77 the final Messier on my bino quest would also be up. I unpacked the tripod and binos, and walked westward across the cemetery until I could clearly see Cetus above the trees. Again with patience and averted vision, (and trying to block out those damned wind chimes) a faint small glow began to appear where it should. Unbelievable, success! I didn't think I'd actually do it.

Well it was a wonderful night despite the near heart attacks but I do have to say, I didn't go back there during my stay. The view from my Mom's back yard although restricted in it's horizon, had a much more relaxed feel to it.... Maybe next year.

Bill Weir.

Star Party

2004 RASCal's Star Party

September 17 to 19

Lat 48° 33.731'N
Long 23 ° 33.749' W
Elevation: 345 metres

at the:

Victoria Fish and Game Association
700 Holker Road
Cobble Hill, BC

Directions:

Coming from Victoria:
Turn Right on Holker Road opposite the Spectacle Lake turn off.

Coming from Duncan area:
Turn Left on Holker Road opposite the Spectacle Lake turn off.

Cost: $15 single and $20 couple or family (max 4 children under age 16). Fee includes tickets for daily door prize draws, lectures and camping on site. Attend for one hour or 3 days, same price—what a bargain!

Confirm your attendance to Rich Willis

Phone: (250) 881-7523 (PDT)
Email richly@telus.net

A Ghost Story

It was a dark and stormy night..... No wait scrap that, I think that's been used before.

Recently I was back in the small town of Trail, on the annual pilgrimage to visit my Mother and In-laws. Trail is located in the mountains of southern British Columbia along the Columbia river. I usually take some sort of travel scope along and this year was no different. I had a 70mm refractor that I'd salvaged off the junk pile at the Pearson College observatory and my 10X50 binos.

The problem with Trail is that it resides at the bottom of a valley with tall mountains all around so the horizon sucks. The light pollution isn't bad. If you can get out of the direct sight of street lights the Milkyway is clearly visible. In fact on one night from my Mom's backyard I could see the North American Neb, naked eye. One afternoon I drove around looking for a good horizon and was coming up empty. I then remembered what I'd heard Ernie often say, " cemeteries are a great place to observe from". Out of town I drove ,6 miles up the mountain out of the valley and in through the gates. High on the hillside with a fairly good view to the south west, I knew this would be the spot. Later that night I went back. Unfortunately, shortly after I got there it clouded in but not before I could see that all of the Tea Pot of Sagittarius was visible.

The next night was clear and I arrived and set up shortly before the clock struck midnight. First item up was to locate with binos two of the three final objects needed to have found all of the Messiers with my binos. M55 was easy, a fairly bright and large GC in Sag. M70 another GC was a fair bit tougher but eventually a small faint glow was teased out of the bottom of the Tea Pot. That's when I heard the first noise. It was a faint tinkling, not dissimilar to the sound used in movies for Fairies. It came and went. Very spooky. Took a while before I figured out that some clown had stuck a glass wind chime in a tree. It was a while before my heart stopped racing and I was able to concentrate again.

Now it was the little refractor's turn. Wheeling it through the sky with various powers between 20-63X was a thrill. The Milkyway blazed over head. Then the second sound struck. With my head down marveling at how well NGC7293 (Helix Neb) showed up using an Ultra Block filter, something very large flew over my head. The sound of the beat of wings made me jump. I swear I could feel their wind. Now my imagination went wild. I could hear rustling in the woods to the side, and then behind me I'm sure I could hear footsteps. It was all I could do to keep my feet planted and not run to the car. Eventually I settled by repeating to myself the phrase I always go by when observing alone, "you'll never hear the one that gets you".

At around 0215 I was getting ready to leave and packing up when I noticed a sparkling jewel rising above the trees to the east. The Pleiades! First time seen

(Continued on page 13)

Pyramid Weekend Madness

Literally speaking, Astronomy is akin to Archeology. In both of these sciences we look into the past and struggle to find the future. So this summer as a part of Royal British Columbia Museum's "Pyramid Weekend Madness", a few of us had an opportunity to visit the past, a really long, long time ago—a time when the Pharaohs ruled Egypt. In our journey of investigation, we discovered a few things about ourselves:

- Be honest, if you don't know the subject, make things up and tell your audience that that is what you have done.
- Do your homework.

Early in July the Centre received a request from the RBCM for our participation in the "Pyramid Weekend Madness" July 24 to 25.

We were given the task of preparing some kind of demonstration and possible giving a slide show. We did not have much time to dilly-dally. The same weekend was the CVSF's annual star party. There were many questions i.e., will there be enough willing (without twisting their arms) volunteers? Speaker, no problem! I knew just the right person to ask. But the type of demonstration, posed a problem! So the frantic phone calls to some trusted members, who are always there when you need them. Blair, who was the inspiration "don't give me the details, just do it, don't care what you do, I will be there". To start things rolling I had a brain storming session with Stephen Courtin to narrow the choices of what type of demonstrations we could prepare in such a short time. Finally the participation included:

- Demonstration of the techniques used of aligning the pyramids to the true North and hands-on activities that the Museum patrons could use to build their own pyramid so that their souls will go to an eternal place in the cosmos. The RASC volunteers who had participated have already got their 'reservations'.
- Procession of the Poles.

(Continued on page 6)

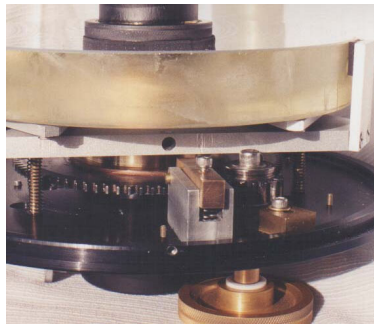
(Museum Continued from page 5)

- Chris Gainer gave slide presentations on “The History of Mars Exploration”.
- Chris’s presentations were complimented by Michael Shepard’s presentations of the “Heavens of the Pharaohs”

As can be seen from the pictures, David had taken, we all had lots of fun, especially George who arrived in period costume, and learned a lot exploring the mind of the chief architects of the pyramids and pretending to be the workers who bear the toll of hard work. My appreciation goes to Stephen Courtin, Sandy Barta, Blair Pellat, David Lee, Brenda Stuart, George Gibson, Frank Jones, Don Dundee, and Chris Gainer for their time and effort to make the event enjoyable. As mentioned before their place is reserved.

Sid Sidhu
Images by David Lee

Maksutov. Continued

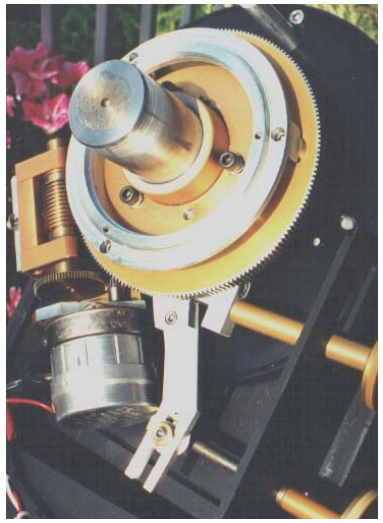


The geared primary mirror focusing mechanism. The 8” mirror rests in a 9 point flotation cell.

about 3” of overhang between the fork and the bearing block; however, the 2” steel R.A. shaft affords sufficient rigidity. The R.A. axis turns on a 2.5” bore roller bearing which is very conservative for the given load. All of the mechanical parts and materials (except the 7.5” Byers gear) were purchased from local Vancouver scrap metal dealers.

The optical design began in September 1997 and the telescope saw first light in June 1999; the “golden beast” (as it is affectionately called in our household) was effectively completed by October of that year. With my return to the RASC pack (after too many years accumulating academic degrees) the Mak made its first appearance at Mount Kobau in 2003 where it garnered the prize for mechanical excellence. More information and photos about the telescope and my CCD camera design can be found by following the links at: http://www.pyxiscamera.com.

Dr. Marc R. Baril
Astronomy Research Technology Group: Victoria
Herzberg Institute of Astrophysics



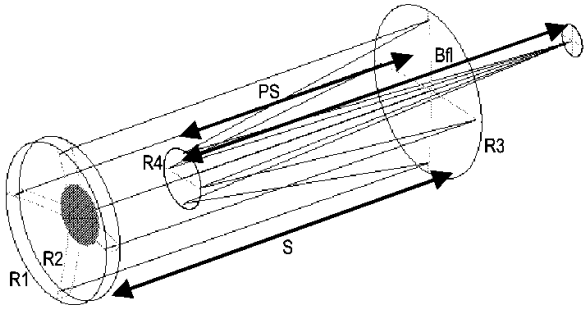
View inside the RA block housing. The RA circle rotates on a bare aluminum ring mounted on the Byers gear so that once it is offset, it keeps sidereal time.

Pearson College Observing

Bill Weir is willing to make it possible for members to observe at the College again this summer. Call 478-5873 to arrange times. I'm flexible. Bring your own scope or use the scopes that are there. Mark Wheen the astronomy instructor would like more RASC members to take advantage of the place.

Maksutov. Continued

aspherize the front of the corrector meniscus to remove any residual on-axis (monochromatic) aberrations in the telescope. The principle of Maksutov's design is simple; the combined spherical aberration of the primary and secondary mirrors is balanced by a meniscus lens of (almost) zero power with equal and opposite spherical aberration. The chromatic aberration in the corrector is minimized by selecting low dispersion glass (e.g. BK7) and making the radius of curvature of the concave side of the lens (the front) slightly shorter than on the convex side (the back). This allows for the correction of two colours.



Optical path through the Maksutov. The secondary obstruction is 39%—far more than is advisable in a small telescope intended for planetary observation. Nevertheless, views of the planets are surprisingly satisfactory given the aperture.

The fabrication technique for Maksutov optics has more akin with lens making than with the mirror fabrication most ATMs are familiar with. Optical testing is particularly straightforward due to the absence of aspherics, however the mechanical tolerances are extremely critical. In particular, the ratio of the radii of curvature of the front and back of the lens must not differ by more than 0.1%, otherwise chromatic aberration will appear. The required measurements are at the limit of what is possible by mechanical means; spherometer readings to within 0.0002" repeatability are required. Also, one must carefully track the progress of material removal to ensure that the final lens thickness does not differ by more than 0.001" from the prescription. All of the grinding was performed by hand in our one-bedroom flat in uptown Vancouver. The corrector lens was the first item manufactured. Upon completion of the lens, the design was re-optimized using the final measured dimensions of the corrector.

In designing the mounting I was particularly struck by the beautiful craftsmanship of Howard Louth's 5.5" instrument (S&T: July 1966). I attempted to emulate this in my own design. One particular difficulty was arranging for the R.A. circle to be mounted on the tracking gear while keeping the R.A. circle in plain view, near the fork. This involved placing the gear/friction-clutch assembly and R.A. circle between the fork and R.A. axis bearing block. For this reason there is

(Continued on page 11)

ROYAL ASTRONOMICAL SOCIETY OF CANADA • VICTORIA CENTRE

NASA's Space Place

Space Weather

Radiation storms, 250 mile-per-second winds, charged particles raining down from magnetic tempests overhead ... it sounds like the extreme weather of some alien world. But this bizarre weather happens right here at Earth.

Scientists call it "space weather." It occurs mostly within the gradual boundary between our atmosphere and interplanetary space, where the blast of particles and radiation streaming from the Sun plows into the protective bubble of Earth's magnetic field. But space weather can also descend to Earth's surface. Because the Earth's magnetic field envelops all of us, vibrations in this springy field caused by space weather reverberate in the room around you and within your body as much as at the edge of space far overhead.

In fact, one way to see these "geomagnetic storms" is to suspend a magnetized needle from a thin thread inside of a bottle. When solar storms buffet Earth's magnetic field, you'll see the needle move and swing. If you live at higher latitudes, you can see a more spectacular effect: the aurora borealis and the aurora australis. These colorful light shows happen when charged particles trapped in the outer bands of Earth's magnetic field get "shaken loose" and rain down on Earth's atmosphere.

And because a vibrating magnetic field will induce an electric current in a conductor, geomagnetic storms can have a less enjoyable effect: widespread power blackouts. Such a blackout happened in 1989 in Quebec, Canada, during a particularly strong geomagnetic storm. These storms can also induce currents in the metallic bodies of orbiting satellites, knocking the satellite out temporarily, and sometimes permanently.

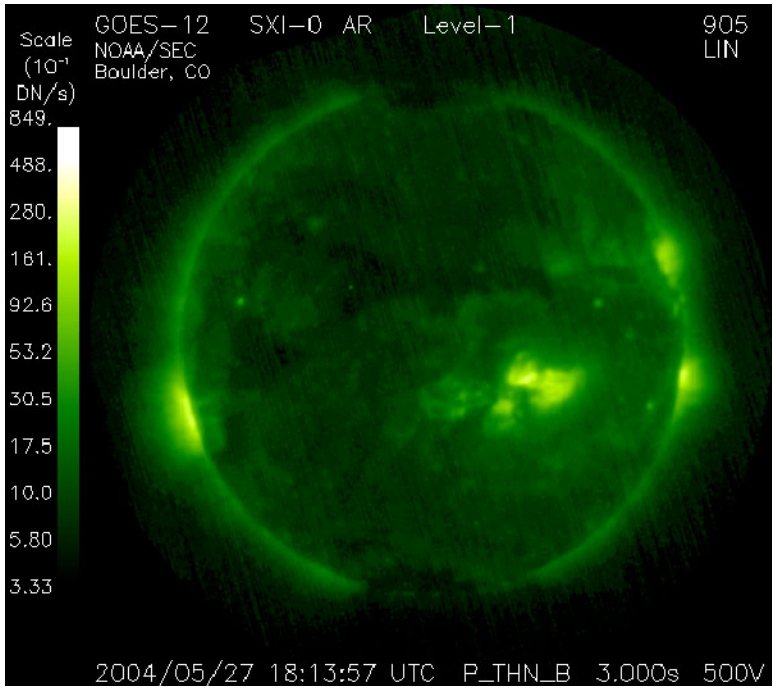
Partly because of these adverse effects, scientists keep close tabs on the space weather forecast. The best way to do this is to watch the Sun. The NASA/ESA SOHO satellite and NOAA's fleet of GOES satellites keep a constant watch on the Sun's activity. If a "coronal hole"—where high-speed solar wind streams out from the Sun's surface—comes into view, it could mean that a strong gust of solar wind is on its way, along with the geomagnetic storms it will trigger. And an explosive ejection of hot plasma toward the Earth—called a "coronal mass ejection"—could mean danger for astronauts in orbit. The advancing front of ejected matter, moving much faster than the solar wind, will accelerate particles in its path to near the speed of light, spawning a radiation storm that can threaten astronauts' health.

(Continued on page 8)

The Space Place Continued

Look for coming articles for more about space weather and about NOAA's efforts to forecast these celestial storms. Meanwhile, read today's space weather forecast at http://www.sec.noaa.gov/.
Kids can learn about the geostationary and orbits of the GOES satellites at: http://spaceplace.nasa.gov/en/kids/goes/goes_poes_orbits.shtml

By Patrick L. Barry and Tony Phillips



This image shows the outer solar atmosphere, or corona, as viewed by the GOES 12 Solar X-ray Imager (SXI). It shows the plasma at 4.0 MK (million degrees Kelvin). Bright areas are associated with sunspots seen in white light images and may produce explosive events known as flares. Dark regions are coronal holes where the fastest solar wind originates. Image courtesy of the Space Environment Center/NOAA.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.

A Maksutov from the Rainy City

One of the often overlooked advantages of amateur telescope building in Vancouver is the endless quantity of rainy nights that can be devoted to work in the optical shop – guilt free. Given this context, you will appreciate that for a Vancouverite, the notion of fabricating a Maksutov-Cassegrain telescope from scratch isn't particularly far fetched. In short, on what must have been a particularly moist October evening, I succumbed to fantasy and ordered a custom ground BK7 blank from Newport Optics to fabricate a Maksutov meniscus lens. I suspect that in truth, this project was devised subconsciously as a ploy to distract myself from my doctoral thesis, which at the time was making snail-like progress.

As a graduate student in physics one is graced with two benefits; neither of which are income, disposable or otherwise. The first is an almost endless amount of time to fritter away on fruitless pursuits; this is essential for the timely completion of any optical instrumentation. The key benefit however, is free access to machine tools without which the construction of a Maksutov, although not impossible, is certainly impractical. These are the blessings that made the construction of a Maksutov feasible to myself seven years ago.

The design for the telescope was inspired primarily by three articles in the (sadly demised) "Gleanings for ATM's" section of Sky and Telescope (June 1975, 399-405; July 1966, 40-43; September 1975, 190-192). The optical design derives from that of Robert Sigler (S&T: September 1975), which uses a separate secondary mirror to allow more flexibility in correcting the aberrations. The increased number of degrees of freedom in this design compared to Gregory's (which used an aluminized spot on the corrector for a secondary) allows for much shorter focal ratios. Some will recognize this design as a "Rumak" (i.e. Russian Maksutov), so named due to its popularity with the Russian manufacturers (e.g. INTES). My design differs primarily from Sigler's in its use of a somewhat shorter distance between the primary and secondary; it has a clear aperture of 7.5" and a focal ratio of f/8. It was optimized using computer ray-tracing.

The 7.5" f/8 Maksutov. The finderscope and counterweight slide on dovetailed ways to allow cameras and additional weights to be mounted. I recently added a JMI motorized focuser for photography

The elegance of Maksutov's design is its complete lack of aspheric surfaces, although the faster Maksutov's always benefit from the inclusion of at least one aspheric surface. It is common to slightly

(Continued on page 10)